CLAIMS

What is claimed is:

1. A method comprising:

computing a plurality of preliminary Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame;

determining a window type of the current frame using the plurality of preliminary MDCT coefficients of the current frame and the plurality of preliminary MDCT coefficients of the next frame; and

if the determined window type of the current frame is not the long window type, computing a plurality of final MDCT coefficients for the current frame using the determined window type.

2. The method of claim 1 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

3. The method of claim 1 further comprising:

if the determined window type of the current frame is the long window type, using the plurality of preliminary MDCT coefficients of the current frame as the plurality of final MDCT coefficients of the current frame.

4. The method of claim 1 wherein determining a window type of the current frame comprises:

determining a preliminary window type of the next frame; and

utilizing the preliminary window type of the next frame and a window type of a previous frame to determine the window type of the current frame.

5. The method of claim 4 wherein determining a preliminary window type of the next frame comprises:

computing a total energy of the current frame using the plurality of preliminary MDCT coefficients of the current frame;

computing a total energy of the next frame using the plurality of preliminary MDCT coefficients of the next frame;

determining whether a transition from a steady signal to a transient signal is likely to occur in the next frame based on the total energy of the current frame and the total energy of the next frame; and

if the transition is likely to occur, deciding that the preliminary window type of the next frame is a short window type.

6. The method of claim 5 further comprising:

if the transition is not likely to occur, deciding that the preliminary window type of the next frame is a long window type.

7. The method of claim 5 wherein utilizing the preliminary window type of the next frame and a window type of a previous frame to determine the window type of the current frame comprises:

identifying the window type of the previous frame; and

selecting a transitional window type for the current frame to transition from the window type of the previous frame to the preliminary window type of the next frame, the selection favoring use of the long window type over use of the short window type.

8. A method comprising:

detecting an indication of a transition from a steady signal to a transient signal in a next frame of data; and

deciding that a preliminary window type of the next frame is a short window type; and

determining a window type of a current frame of data based on the preliminary window type of the current frame and a window type of a previous frame of data, the determination of the window type of the current frame favoring use of a long window type over use of the short window type.

9. The method of claim 8 wherein detecting an indication of a transition comprises:

computing a plurality of Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame;

computing a total energy of the current frame using the plurality of preliminary MDCT coefficients of the current frame;

computing a total energy of the next frame using the plurality of preliminary MDCT coefficients of the next frame;

scaling the total energy of the current frame and the total energy of the next frame in logarithmic way;

calculating a gradient energy by subtracting the scaled total energy of the current frame from the scaled total energy of the next frame;

determining whether the gradient energy exceeds a threshold value; and

if the gradient energy exceeds the threshold value, deciding that the transition to the transient signal is likely to occur in the next frame.

10. The method of claim 9 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

11. The method of claim 9 wherein the threshold value is experimentally determined.

12. The method of claim 9 further comprising:

if the gradient energy does not exceed the threshold value,

deciding that the transition to the transient signal does not occur in the next frame, and

deciding that the preliminary window type of the next frame is a long window type.

13. The method of claim 8 wherein determining a window type of a current frame of data based on the preliminary window type of the next frame and a window type of a previous frame of data comprises:

identifying the window type of the previous frame; and

selecting a window type for the current frame to transition from the window type of the previous frame to the preliminary window type of the next frame, the selection favoring the use of the long window type over the use of the short window type.

14. The method of claim 13 wherein selecting a window type for the current frame comprises:

selecting a long window type for the current frame if the preliminary window type of the next frame is a long window type and the window type of the previous frame is any one of a long window type and a short-long window type.

15. The method of claim 13 wherein selecting a window type for the current frame comprises:

selecting a short-long window type for the current frame if the preliminary window type of the next frame is a long window type and the window type of the previous frame is any one of a short window type and a long-short window type.

16. The method of claim 13 wherein selecting a window type for the current frame comprises:

selecting a long-short window type for the current frame if the preliminary window type of the next frame is a short window type and the window type of the previous frame is any one of a long window type and a short-long window type.

17. The method of claim 13 wherein selecting a window type for the current frame comprises:

selecting a short window type for the current frame if the preliminary window type of the next frame is a short window type and the window type of the previous frame is any one of a short window type and a long-short window type.

18. A computer readable medium that provides instructions, which when executed on a processor cause the processor to perform a method comprising:

detecting an indication of a transition from a steady signal to a transient signal in a next frame of data; and

deciding that a preliminary window type of the next frame is a short window type; and

determining a window type of a current frame of data based on the preliminary window type of the current frame and a window type of a previous frame of data, the determination of the window type of the current frame favoring use of a long window type over use of the short window type.

19. The computer readable medium of claim 18 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

20. The computer readable medium of claim 18 wherein the method further comprises:

if the determined window type of the current frame is the long window type, using the plurality of preliminary MDCT coefficients of the current frame as the plurality of final MDCT coefficients of the current frame.

21. A computer readable medium that provides instructions, which when executed on a processor cause the processor to perform a method comprising:

computing a plurality of preliminary Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame;

determining a window type of the current frame using the plurality of preliminary MDCT coefficients of the current frame and the plurality of preliminary MDCT coefficients of the next frame; and

if the determined window type of the current frame is not the long window type, computing a plurality of final MDCT coefficients for the current frame using the determined window type.

22. The computer readable medium of claim 21 wherein detecting an indication of a transition comprises:

computing a plurality of Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT

coefficients for a next frame of data using a long window type for each of the current frame and the next frame;

computing a total energy of the current frame using the plurality of preliminary MDCT coefficients of the current frame;

computing a total energy of the next frame using the plurality of preliminary MDCT coefficients of the next frame;

scaling the total energy of the current frame and the total energy of the next frame in logarithmic way;

calculating a gradient energy by subtracting the scaled total energy of the current frame from the scaled total energy of the next frame;

determining whether the gradient energy exceeds a threshold value; and

if the gradient energy exceeds the threshold value, deciding that the transition to the transient signal is likely to occur in the next frame.

23. The computer readable medium of claim 22 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

24. A computerized system comprising:

a memory; and

at least one processor coupled to the memory, the at least one processor executing a set of instructions which cause the at least one processor to

detect an indication of a transition from a steady signal to a transient signal in a next frame of data,

decide that a preliminary window type of the next frame is a short window type, and

determine a window type of a current frame of data based on the preliminary window type of the current frame and a window type of a previous frame of data, the determination of the window type of the current frame favoring use of a long window type over use of the short window type.

25. The system of claim 24 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

26. The system of claim 24 wherein the processor is further to use the plurality of preliminary MDCT coefficients of the current frame as the plurality of final MDCT coefficients of the current frame if the determined window type of the current frame is the long window type.

27. A computerized system comprising:

a memory; and

at least one processor coupled to the memory, the at least one processor executing a set of instructions which cause the at least one processor to

compute a plurality of preliminary Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame,

determine a window type of the current frame using the plurality of preliminary MDCT coefficients of the current frame and the plurality of preliminary MDCT coefficients of the next frame, and

if the determined window type of the current frame is not the long window type, compute a plurality of final MDCT coefficients for the current frame using the determined window type.

28. The system method of claim 27 wherein the processor is to detect an indication of a transition by

computing a plurality of Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame,

computing a total energy of the current frame using the plurality of preliminary MDCT coefficients of the current frame,

computing a total energy of the next frame using the plurality of preliminary MDCT coefficients of the next frame,

scaling the total energy of the current frame and the total energy of the next frame in logarithmic way,

calculating a gradient energy by subtracting the scaled total energy of the current frame from the scaled total energy of the next frame,

determining whether the gradient energy exceeds a threshold value, and

if the gradient energy exceeds the threshold value, deciding that the transition to the transient signal is likely to occur in the next frame.

29. The system of claim 28 wherein the plurality of preliminary MDCT coefficients is computed from a plurality of corresponding samples produced along the time axis.

30. An apparatus comprising:

means for detecting an indication of a transition from a steady signal to a transient signal in a next frame of data; and

means for deciding that a preliminary window type of the next frame is a short window type; and

means for determining a window type of a current frame of data based on the preliminary window type of the current frame and a window type of a previous frame of data, the determination of the window type of the current frame favoring use of a long window type over use of the short window type.

31. An apparatus comprising:

means for computing a plurality of preliminary Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame;

means for determining a window type of the current frame using the plurality of preliminary MDCT coefficients of the current frame and the plurality of preliminary MDCT coefficients of the next frame; and

means for computing a plurality of final MDCT coefficients for the current frame using the determined window type if the determined window type of the current frame is not the long window type.

32. An apparatus comprising:

a Modified Discrete Cosine Transform (MDCT) coefficients calculator to compute a plurality of preliminary Modified Discrete Cosine Transform (MDCT) coefficients for a current frame of data and a plurality of preliminary MDCT coefficients for a next frame of data using a long window type for each of the current frame and the next frame; and

a window-type determinator to determine a window type of the current frame using the plurality of preliminary MDCT coefficients of the current frame and the plurality of preliminary MDCT coefficients of the next frame,

wherein the MDCT coefficients calculator is further to compute a plurality of final MDCT coefficients for the current frame using the determined window type if the determined window type of the current frame is not the long window type.